

PATENT COOPERATION TREATY

From the
 INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

see Form PCT/ISA/220

WRITTEN OPINION OF THE
 INTERNATIONAL SEARCHING AUTHORITY
 (PCT Rule 43bis.1)

Date of mailing
 (day/month/year) see Form PCT/ISA/210 (Sheet 2)

Applicant's or agent's file reference

FOR FURTHER ACTION

see Form PCT/ISA/220

see paragraph 2 below

International application No.
 PCT/EP2004/010746

International filing date (day/month/year)
 24.09.2004

Priority date (day/month/year)
 26.09.2003

International Patent Classification (IPC) or both national classification and IPC
 G05B23/02

Applicant
 SIEMENS AKTIENGESELLSCHAFT

1. This opinion contains indications relating to the following items:

- | | |
|---|--|
| <input checked="" type="checkbox"/> Box No. I | Basis of the opinion |
| <input checked="" type="checkbox"/> Box No. II | Priority |
| <input checked="" type="checkbox"/> Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| <input type="checkbox"/> Box No. IV | Lack of unity of invention |
| <input checked="" type="checkbox"/> Box No. V | Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/> Box No. VI | Certain documents cited |
| <input type="checkbox"/> Box No. VII | Certain defects in the international application |
| <input type="checkbox"/> Box No. VIII | Certain observations on the international application |

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA

Authorized officer

European Patent Office
 D-80298 Munich
 Tel. +49 89 2399
 Tx: 523656 epmu d
 Fax: +49 89 2399 - 4465

Kuntz, J-M
 Tel. +49 89 2399-5739

Form PCT/ISA/237 (cover sheet) (January 2004)

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1 b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material
☐ a sequence listing
☐ table(s) related to the sequence listing

 - b. format of material
☐ on paper
☐ in electronic form

 - c. time of filing/furnishing
☐ contained in the international application as filed
☐ filed together with the international application in electronic form
☐ furnished subsequently to this Authority for the purposes of search

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

Box No. II Priority

1. ☒ The following document has not been filed yet.
☒ Copy of the previous application, the priority of which has been claimed (Rule 43 bis.1 and 66.7(a)).
☐ Translation of the previous application, the priority of which has been claimed (Rule 43bis.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ The opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43bis.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.
3. ☐ It was not possible to verify the validity of the priority claim, as at the time of the search the International Searching Authority did not have a copy of the priority document (Rule 17.1). This opinion has therefore been established on the assumption that the claimed priority data is the date of relevance to the verification.

4. Additional observations, if necessary:

Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

- ☐ the entire international application
☒ claims Nos. 8, 11

Because:

- ☒ the said international application or the said claims Nos. 8, 11 relate to the following subject matter which does not require an international preliminary examination (*specify*):

See supplemental box

- ☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. ____ are so unclear that no meaningful opinion could be formed (*specify*):
- ☐ no international search report has been established for the application as a whole or for the said claims Nos.
- ☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions, in that:

the written form

- ☐ has not been furnished
☐ does not comply with the standard

the computer readable form

- ☐ has not been furnished

☐ does not comply with the standard

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-bis of the Administrative Instructions.

☒ See Supplemental Box for further details.

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N) Yes: Claims 3-7, 9-10, 12-18
No: Claims 1,2

Inventive step (IS) Yes: Claims
No: Claims 1-7, 9-10, 12-18

Industrial applicability (IA) Yes: Claims 1-7, 9-10, 12-18
No: Claims

2. Citations and explanations:

see Supplemental Box

Re Box III

Claims 8 and 11 do not satisfy the requirements of Rule 6.3 and Rule 6.4 PCT, because the features additionally claimed are not of a technical nature.

Re Box No. V

1. In the present opinion reference is made to the following document:

D1: DE 42 07 354 A (MITSUBISHI ELECTRIC CORP) 5 November 1992 (1992-11-05)

2. The present application does not satisfy the requirements of Article 33(1) PCT, because the subject matter of claim 1 is not novel (Article 33(2) PCT).

Document D1 discloses (the references in brackets refer to this document):

a method for determining the causes of malfunctions and performance limits in an installation (column 1, lines 3-9), with the method comprising the following steps:

- *provision of data about causes of malfunctions and performance limits in a larger number of installations (column 3, lines 54-55); the identifying description of the possible causes of an error represents the above-mentioned data about causes of malfunctions and performance limits).*
- *generation of a questionnaire about these causes from this data (column 3, lines 54-55; the present set of questions was of necessity generated at a specific time),*
- *collection of responses from employees in the installation under investigation to the questions in the questionnaire (column 3, line 63 to column 4, line 11),*
- *determination of the causes of malfunctions and performance limits of the installation under investigation by analyzing the responses of the employees to the questions in the questionnaire (column 3, line 29 and column 4, line 65 to column 5, line 4).*

Therefore all the features of claim 1 are disclosed in D1.

3. The present application does not satisfy the requirements of Article 33(1) PCT, because the subject matter of claim 13 is not based on an inventive step in the terms of **Article 33(3) PCT**.

The document D1 is deemed to be the closest prior art in respect of the subject matter of claim 13, It discloses:

a device for determining the causes of malfunctions and performance limits in an installation (column 1, lines 3-9) with

- *a first database containing data about causes of malfunctions and performance limits in a plurality of installations (column 3, lines 54-55),*
- *a second database containing data about the installation under investigation (column 3, lines 60-62),*
- *an output mechanism to output a questionnaire (column 3, lines 63-68),*
- *an input mechanism to input responses of employees working in the installation to the questions in the questionnaire (column 3, line 63 to column 4, line 11),*
- *a data processing unit to determine the causes of malfunctions and/or performance limits of the installation under investigation by analyzing the responses of the employees to the questions in the questionnaire (column 4, line 66 to column 5, line 4).*

The subject matter of claim 13 therefore differs from the known device in that
a data processing unit generates the questionnaire from the data in the first database and the second database.

The object to be achieved with the present invention can therefore be seen to be the machine-generation of the questionnaire.

To achieve this object the person skilled in the art would of course use the available data processing unit to generate the questionnaire based on the available data, without an inventive step being required for this purpose.

4. The present invention therefore fails to satisfy the requirements of Article 33(1) PCT, because the subject matter of claim 2 is not novel (**Article 33(2) PCT**).

Document D1 discloses all the features of claim 1 (see point 1). Document D1 also discloses a method, whereby

Data is supplied about the installation under investigation (see column 3, lines 60-62)

Therefore all the features of claim 2 are disclosed in D1.

5. The dependent claims 3-7, 9, 10, 12 and 14-18 contain no features which, in combination with the features of any claim to which they relate, satisfy the requirements of the PCT in respect of inventive step **Article 33(3)**, see document D1 and the corresponding text points specified in the search report.

Claims

1. Method for determining the causes of malfunctions and performance limits in an installation (15) with the method comprising the following steps:

- provision of data (51a-i) about causes of malfunctions and performance limits in a larger number of installations (40a-c),
- generation of a questionnaire (26) about these causes from this data,
- collection of responses (27) from employees (29) in the installation under investigation (15) to the questions in the questionnaire (26),
- determination of the causes of malfunctions and performance limits of the installation under investigation (15) by analyzing the responses (27) of the employees (29) to the questions in the questionnaire (26),

with data (70, 71) about the installation under investigation (15) being requested, with data of relevance to the installation under investigation being selected from the data about causes of malfunctions and performance limits and the questionnaire only containing questions relating to the installation under investigation.

2. Method according to claim 1, with

- the data (51a-i) about the causes of malfunctions and performance limits being stored in a first database (21),
- the data (70, 71) about the installation under investigation (15) being stored in a second database (22),
- the questionnaire (26) being generated by a data processing unit (23) from the data in the first (21) and second (22) databases and being output by an output unit (24),
- the responses (27) of the employees (29) being captured via

an input unit (27) and stored in the second database (22),
- the causes of malfunctions and performance limits being determined by the data processing unit (23) based on the stored responses (27) of the employees (29).

3. Method according to claim 1, with data (52a-i) about improvement measures being stored in the first database (21) in addition to the data (51a-i) about the causes of malfunctions and performance limits.

4. Method according to one of the preceding claims, with
- the data (51a-i) about the causes being assigned respectively to installation elements (61 to 67),
- the data (70, 71) in the second database (22) containing details (70) about installation elements (70) occurring in the installation under investigation (15) and
- the questionnaire (26) only containing questions for installation elements occurring in the installation (15).

5. Method according to claim 1, with
- the data (51a-i) about the causes being assigned respectively to target groups (53-55),
- the data (70, 71) about the installation under investigation (15) containing details (71) about the target groups to be questioned,
- the questionnaire (26) being generated such that it only contains questions for employees (29) in the target groups to be questioned.

6. Method according to one of the preceding claims, with the questions in the questionnaire (26) relating to drive and/or automation components of the installation (15).

7. Method according to one of the preceding claims, with the responses (27) of the employees (29) being collected by means of interviews.

8. Method according to one of claims 1 to 6, with the responses (27) of the employees (29) being collected via a data network (30).

9. Method according to one of the preceding claims, with the data about the causes of malfunctions and performance limits being obtained from malfunction reports (47) and/or field reports (48) from other installations (40a-c).

10. Method according to one of the preceding claims, with the method being implemented by a technical service provider.

11. Method according to one of the preceding claims, with an assessment of the technical state of the installation (15) being made based on the responses (27) of the employees (29) and with the aid of a defined assessment rule (44).

12. Device for determining the causes of malfunctions and performance limits in an installation (15) with

- a first database containing data (51a-i) about causes of malfunctions and performance limits in a plurality of installations (40a-c),
- a second database (22) containing data (70, 71) about the installation under investigation (15),
- an output mechanism (24) to output a questionnaire (26),
- an input mechanism (25) to input responses (27) of employees (29) working in the installation (15) to the questions in the questionnaire (26) and to input the data about the installation under investigation,

- a data processing unit (23) to generate the questionnaire (26) from the data in the first database (21) and the second database (22) and to determine the causes of malfunctions and/or performance limits of the installation under investigation (15) by analyzing the responses (27) of the employees (29) to the questions in the questionnaire (26), with
 - the data (51a-i) about the causes being assigned respectively to target groups (53-55),
 - the data (70, 71) about the installation to be assessed (15) containing details (71) about the target groups to be questioned,
 - the questionnaire (26) being generated such that it only contains questions for employees (29) in the target groups to be questioned.

13. Device according to claim 12, with data (52a-i) about improvement measures being stored in the first database (21) in addition to the data (51a-i) about the causes of malfunctions and performance limits.

14. Device according to one of claims 12 to 13, with
- the data (51a-i) about the causes being assigned respectively to installation elements (61 to 67),
 - the data (70, 71) in the second database (22) containing details (70) about the installation elements occurring in the installation under investigation (15),
 - the questionnaire (26) only containing questions for installation elements occurring in the installation (15).

15. Device according to one of claims 12 to 14, with the output unit (26) and the input unit (25) being able to be connected to the employees (29) via a data communication

network (30).

16. Device according to one of claims 12 to 15, with the first database (21) being able to be connected to a plurality of installations (40a-c) via a data network (41).